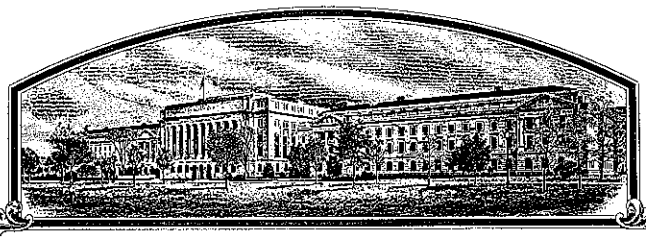


No. 9200105

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

HyPerformer Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT . 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'HSC 623'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 31st *day of* August *in the year of our Lord one thousand nine hundred and* ninety-four.

Attest:

Kenneth B. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Helena Chemical Company also d/b/a
HyPerformer Seed Company

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
HB90-623

3. VARIETY NAME
HSC 623

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
6075 Poplar Avenue
Suite 500
Memphis, TN 38119

5. PHONE *(Include area code)*
901-761-0050

FOR OFFICIAL USE ONLY

PVPO NUMBER
9200105

FILING
Date: Feb. 5, 1992
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2150.00
Date: Feb 5, 1992
Certificate Fee: $ 250.00
Date: Aug. 4, 1994

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

8. CROP KIND NAME *(Common Name)*
Soybean

9. DATE OF DETERMINATION
1983

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Delaware

12. DATE OF INCORPORATION
1977

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Al Hoggard
Helena Chemical Company
6075 Poplar Avenue - Suite 500
Memphis, TN 38119

PHONE *(Include area code)*: 901-761-0050

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety.
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [X] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 1-27-92
g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☐ YES *(If "YES," answer items 16 and 17 below)* [X] NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES [X] NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
[X] NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES (If "YES," give names of countries and dates) Limited sales in April and May of 1991 in the United States.
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Richard L. Sullivan Jr.	Director of Seed	1/27/92
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Bobby Pace	VP Tech Services	1-27-92

EXHIBIT A

HELENA CHEMICAL COMPANY, INC.'S APPLICATION FOR HSC 623

Origin and Breeding History of the Variety

1980 - Cross number 80059 made, Bedford X DP 105
1980-1981 - F_1 plants grown in winter nursery
1981 - F_2 advanced to F_4 in summer and winter nursery via modified single seed descent
1982 - F_4 bulks planted and single plants pulled
1983 - F_5 plant row of 80059-2-2-1 was bulk harvested and determined to be stable and breeding true for major characteristics
1984 - Entered in Preliminary Yield Tests
1985-1989 - Tested in advanced tests at several locations each year as experimental number 1323
1990 - Tested in states experiment station tests as HSC 623
1991 - Released as HSC 623

EXHIBIT B

HELENA CHEMICAL COMPANY, INC.'S APPLICATION FOR HSC 623

Novelty Statement

To our knowledge HSC 623 most nearly resembles A 6297 and DP 105. Differences include but are not necessarily restricted to the following:

HSC 623 vs. A 6297

1) HSC 623 is resistant to frogeye leaf spot, whereas A 6297 is susceptible.

2) HSC 623 has larger seed averaging 15.1 grams per 100 seed versus 13.0 grams/ 100 seed for A 6297.

HSC 623 vs. DP 105

1) HSC 623 is resistant to frogeye leaf spot, whereas DP 105 is moderately susceptible.

2) HSC 623 has white flowers, whereas DP 105 has puple flowers.

	Flower Color	Grams 100 Seed	Frogeye * Leafspot
HSC 623	W	15.1	1.0
DP 105	P	14.7	2.7
A 6297	W	13.0	3.5

* Scores based on (2) locations and (3) replicates at each location with a scale score of 1.0 (very resistant) to 5.0 (very susceptible).

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Helena Chemical Company also d/b/a HyPerformer Seed Company	HB90-623	HSC 623

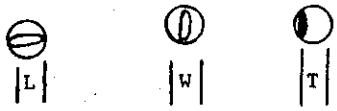
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
6075 Poplar Avenue
Suite 500
Memphis, TN 38119

FOR OFFICIAL USE ONLY
PVPO NUMBER 9200105

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[2]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[1] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][5] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[1] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[ ] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[3] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[1] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[1] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][9] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [2] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [0] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [0] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [2] Race 1 [ ] Race 2 [ ] Race 3 [ ] Race 4 [ ] Race 5 [2] Other *(Specify)* race unspecified

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [0] Brown Stem Rot *(Cephalosporium gregatum)*

1 [X] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*
SUSC. RWS 7-10-92

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

RWS 7-10-92 ★3 [X] Tolerant Race 1 [ ] Race 2 [ ] Race 3 [ ] Race 4 [ ] Race 5 [ ] Race 6 [ ] Race 7

[ ] Race 8 [ ] Race 9 [ ] Other *(Specify)* _____

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

★ [0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [1] Race 1 [1] Race 2 [2] Race 3 [2] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [1] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[1] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [0] Iron Chlorosis on Calcareous Soil

[0] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[2] Potato Leaf Hopper *(Empoasca fabae)*

[0] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	DP 105	Seed Coat Luster	DP 105
Leaf Shape	DP 105	Seed Size	DP 105
Leaf Color	DP 105	Seed Shape	DP 105
Leaf Size	DP 105	Seedling Pigmentation	DP 105

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	143	2.5	81			39.2	22.0	2700	
DP 105 Name of Similar Variety	139	2.2	81			42.0	22.0	2900	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

EXHIBIT D

HELENA CHEMICAL COMPANY, INC.'S APPLICATION FOR HSC 623

Additional Description of Variety

HSC 623 is a selection from the cross Bedford X DP 105 with high yield potential, broad adaptation across a range of soil types, and good disease resistance.

HSC 623 is classified as early group VI maturity being four to six days earlier than Centennial. It has white flowers, gray pubescence, and tan pods at maturity. Seeds are dull yellow with buff hila averaging from 2,850 to 3,150 seed per pound. Plants are medium in height with good lodging resistance.

HSC 623 may have up to 1/5000 plants with either/or purple flowers, tawny pubescence, talls and/or hila other than buff.

HSC 623 is resistant to race 3 and moderately resistant to race 4 of soybean cyst nematode. It has very good tolerance to phytophthora root rot, aerial blight, and metribuzin.

HSC 623 also has shown excellent resistance to frogeye leaf spot. It is moderately susceptible to stem canker and southern root knot nematode.

EXHIBIT E

HELENA CHEMICAL COMPANY, INC.'S APPLICATION FOR HSC 623

Statement of the Basis of Applicant's Ownership

Helena Chemical Company, Inc. is the owner of HSC 623 soybean through purchase of the variety.